

# MAJOR IN NATURAL SCIENCES, BIOLOGY EDUCATION CONCENTRATION

## Requirements Effective Fall 2023

### Freshman

		AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)	3A	4
MATH 155 or 160	Calculus for Biological Scientists I (GT-MA1) Calculus for Physical Scientists I (GT-MA1)	1B	4
Select one group from the following:			4
Group A:			
AA 100	Introduction to Astronomy (GT-SC2)	3A	
AA 101	Astronomy Laboratory (GT-SC1)	3A	
Group B:			
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)	3A	
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )			3
<b>Total Credits</b>			<b>31</b>

### Sophomore

BZ 220	Introduction to Evolution		3
BZ 310	Cell Biology		4
EDUC 275	Schooling in the United States (GT-SS3)	3C	3
EDUC 340	Literacy and the Learner		3
STAT 301	Introduction to Applied Statistical Methods		3
Select one group from the following:			10
Group A:			
PH 121	General Physics I (GT-SC1)	3A	
PH 122	General Physics II (GT-SC1)	3A	
Group B:			
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )			3
Diversity, Equity, and Inclusion ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion</a> )			3
<b>Total Credits</b>			<b>32</b>

### Junior

BMS 300	Principles of Human Physiology		4
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CHEM 245	Fundamentals of Organic Chemistry		4
CHEM 246	Fundamentals of Organic Chemistry Laboratory		1
Select one course from the following:			3-4
BZ 350	Molecular and General Genetics		
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	
SOCR 330	Principles of Genetics		
EDUC 350	Instruction I-Individualization/Management		3
EDUC 386	Practicum-Instruction I		1
EDUC 461A	Secondary Science and Technology Education I		3
EDUC 461B	Secondary Science and Technology Education II		3
Advanced Writing ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing</a> )		2	3
Historical Perspectives ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives</a> )		3D	3
Science Elective <sup>1</sup>			3
<b>Total Credits</b>			<b>31-32</b>
<b>Senior</b>			
EDUC 450	Instruction II-Standards and Assessment		4
EDUC 485B	Student Teaching: Secondary	4A,4B,4C	11
EDUC 486E	Practicum: Instruction II		1
EDUC 493A	Seminar: Professional Relations	4C	1
LIFE 205	Microbial Biology		3
LIFE 206	Microbial Biology Laboratory		2
LIFE 320	Ecology		3
Science Elective <sup>1</sup>			3
<b>Total Credits</b>			<b>28</b>
<b>Program Total Credits:</b>			<b>122-123</b>

<sup>1</sup> Select course(s) in consultation with advisor.

All Biology Education majors must maintain a 2.75 GPA and receive a C or better in all content and education courses for licensure. All course work must be completed prior to Student Teaching (AUCC 4A/4B/4C requirement). Admission into the teacher licensure program is required for phase II education courses and above.

## Major Completion Map

### Distinctive Requirements for Degree Program:

#### Freshman

Semester 1		Critical	Recommended	AUCC	Credits
CHEM 111	General Chemistry I (GT-SC2)		X	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)		X	3A	1
CO 150	College Composition (GT-CO2)			1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)		X	3A	4
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )				3B	3
MATH 117, MATH 118 may be necessary for some students to fulfill pre-calculus requirements.		X			
<b>Total Credits</b>					<b>15</b>

Semester 2		Critical	Recommended	AUCC	Credits
CHEM 113	General Chemistry II		X		3
CHEM 114	General Chemistry Lab II		X		1
LIFE 103	Biology of Organisms-Animals and Plants (GT-SC1)		X	3A	4
Select one group from the following:					4
Group A:					
AA 100	Introduction to Astronomy (GT-SC2)			3A	

AA 101	Astronomy Laboratory (GT-SC1)			3A	
Group B:					
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 121	Introductory Geology Laboratory (GT-SC1)			3A	
Select one course from the following:					
MATH 155	Calculus for Biological Scientists I (GT-MA1)		X	1B	4
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	
LIFE 102 must be completed by the end of Semester 2.					
MATH 124, MATH 125, MATH 126 may be necessary for some students to fulfill pre-calculus requirements.					

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**Total Credits** **16**

**Sophomore**

<b>Semester 3</b>		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
BZ 220	Introduction to Evolution				3
STAT 301	Introduction to Applied Statistical Methods				3
Select one course from the following:					
PH 121	General Physics I (GT-SC1)		X	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)		X	3A	
Arts and Humanities ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities</a> )					
Diversity, Equity, and Inclusion ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion</a> )					
CHEM 111 and CHEM 112 must be completed by the end of Semester 3.					

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**Total Credits** **17**

<b>Semester 4</b>		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
BZ 310	Cell Biology		X		4
EDUC 275	Schooling in the United States (GT-SS3)	X		3C	3
EDUC 340	Literacy and the Learner	X			3
Select one course from the following:					
PH 122	General Physics II (GT-SC1)		X	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)		X	3A	
CO 150 and MATH 155 or MATH 160 must be completed by the end of Semester 4.					
CHEM 113 and CHEM 114 must be completed by the end of Semester 4.					

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**Total Credits** **15**

**Junior**

<b>Semester 5</b>		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
CHEM 245	Fundamentals of Organic Chemistry				4
CHEM 246	Fundamentals of Organic Chemistry Laboratory				1
EDUC 350	Instruction I-Individualization/Management	X			3
EDUC 386	Practicum-Instruction I	X			1
EDUC 461A	Secondary Science and Technology Education I	X			3
Advanced Writing ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing</a> )					
BZ 310 must be completed by the end of Semester 5.					

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**Total Credits** **15**

<b>Semester 6</b>		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
BMS 300	Principles of Human Physiology				4
Select one course from the following:					
BZ 350	Molecular and General Genetics				3-4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)			3A	
SOCR 330	Principles of Genetics				

EDUC 461B	Secondary Science and Technology Education II	X			3
Historical Perspectives ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives</a> )				3D	3
Science Elective					3
<b>Total Credits</b>					<b>16-17</b>
<b>Senior</b>					
<b>Semester 7</b>					
		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
EDUC 450	Instruction II-Standards and Assessment	X			4
EDUC 486E	Practicum: Instruction II	X			1
LIFE 205	Microbial Biology				3
LIFE 206	Microbial Biology Laboratory				2
LIFE 320	Ecology				3
<b>Total Credits</b>					<b>13</b>
<b>Semester 8</b>					
		<b>Critical</b>	<b>Recommended</b>	<b>AUCC</b>	<b>Credits</b>
EDUC 485B	Student Teaching: Secondary	X		4A,4B,4C	11
EDUC 493A	Seminar: Professional Relations	X		4C	1
Science Elective					3
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
<b>Total Credits</b>					<b>15</b>
<b>Program Total Credits:</b>					<b>122-123</b>